

1987 TRANSACTIONS

Board of Directors, AFS—1986-1987	ix	The Value of Seacoal and Seacoal Supplements in Today's Foundry Industry (87-29)— V. S. LaFay, S. L. Nelmer	133
Proceedings Summary of 91st Annual Meeting	xi	Modeling of Microstructural Evolution of Eutectic Cast Iron and of the Gray/White Transition (87-68)—D. M. Stefanescu, C. S. Kanetkar	139
Chapter Officers Conference Program	ixx	Evaluation of 8-15% Bentonite Content Green Sand Properties and Behavior: Part IV Summary (87-102)—T. S. Shih, R. A. Green, R. W. Heine	145
Reports	xxi	Controlling Casting Quality Through Accurate Ladle Positioning and Mold Level Flow Control (87-51)—G. Myers, E. J. Sjodahl	163
Minutes	xxxvii	CuNi Alloyed Austempered Ductile Irons (87-77)—R. Viau, M. Gagné, R. Thibau	171
Ester Cured Alkaline Phenolic Resin Technology Update (87-41)—P. S. Frazier	1	Effect of Organic Additives on the Properties of Green Sand Assessed from Design of Experiments (87-42)—S. P. Gadag, K. S. S. Rao, M. N. Srinivasan, S. Seshan	179
Lower Your Energy Costs in an Electric Arc Furnace Foundry (87-31)—W. R. Conrad	3	Appearance and Composition of Oxide Macroinclusions in Steel Castings (87-12)— J. M. Svoboda, R. W. Monroe, C. E. Bates, J. Griffin	187
Fluid-Impact Compaction of Green Sand Molds (87-107)—D. Boenisch, V. Lorenz	7	Casting Tolerance, Foundry Process Precision, and Pattern Tooling Accuracy (87-30)— G. R. Anderson	203
Experimental Verification of C.A.S.T. (87-43)—M. K. Walther	15	Properties of 12% Cr Heat Resisting Cast Steel for Super-High Pressure and High Temperature Turbine Casing Castings (87-89)— Y. Iwabuchi, K. Azekoshi, S. Yamakuro, M. Murata	211
Geometric Modeling of Directional Solidification Based on Section Modulus (87-61)— S. J. Neises, J. J. Uicker, R. W. Heine	25	Prediction of Thermal Fatigue Life of Flake Graphite Cast Irons (87-02)— M. C. Rukadikar, G. P. Reddy	217
Sodium, Strontium, and Antimony Interactions During Modification of A57G03 (A356) Alloys (87-20)—N. Handiak, J. E. Grzesleski, D. Argo	31	Automation in the Steel Foundry (87-52)— B. J. Sims	227
Development of a Low Pressure Die Casting Process for Improved Soundness of Aluminum Castings (87-22)—S. Morimoto, N. Ohnishi, S. Okada	39	Evaluation of Strontium Modifiers for Al-Si Casting Alloys (87-23)—B. Closset, S. Kitaoka	233
Study of Aluminum Alloy Deformation Behavior Using Acoustic Emissions (87-40)—A. Saigal	47	The Development of a Cast Steel Suitable for Glass Coating (87-25)— M. J. Moryl, C. R. Loper, Jr.	241
Primary Silicon in Hypereutectic Aluminum-Silicon Casting Alloys (87-32)— J. C. Weiss, C. R. Loper, Jr.	51	Reuse of Reclaimed Phenolic Urethane Resin Bonded Sand Mixtures (87-105)— A. Janagan, K. Chinnathambi, H. Md. Roshan	253
More Powerful Inoculants for Gray Cast Iron (87-37)—J. Yang, J. Li, R. Li	63	Mold Dilation and Volumetric Shrinkage of Aluminum Alloys in Green and Dry Sand Molds (87-93)—B. P. Winter, T. R. Ostrom, T. A. Sleder, P. K. Trojan, R. D. Pehlke	259
A Scientific Basis for the Degassing of Aluminum (87-81)—G. K. Sigworth	73	Effects of Molybdenum on Thermal Fatigue Resistance of Ductile and Compacted Graphite Irons (87-90)—Y. J. Park, R. B. Gundlach, J. F. Janowak	267
Microstructure Thermal Analysis and Flowability Correlations in Iron-Carbon-Silicon Alloys: Part I (87-10)—V. Gopalakrishna, J. A. Sekhar	79	Molten Metal Pumping in Foundry and Foundry Ingot Applications (87-53)—D. V. Neff	273
Microstructure Thermal Analysis and Flowability Correlations in Austenitic Cast Irons: Part II (87-11)—V. Gopalakrishna, J. A. Sekhar	89	Geometric Modeling of Progressive Solidification and Casting Alloy Macrostructure (87-78)— S. W. DeKalb, R. W. Heine, J. J. Uicker	281
Maintenance and the Bottom Line (87-48)—J. W. Wasem	93		
Statistical Approach to the Cold Box Sand Mixing Process (87-39)—T. S. Sandhu	99		
Flow of Ductile Iron Through Ceramic Filters and the Effects on Dross and Fatigue Properties (87-172)—P. R. Khan, W. M. Su, H. S. Kim, J. W. Kang, J. F. Wallace	105		
A Computer Controlled Green Sand System (87-27)—J. R. Luckenbaugh, D. P. Sharkus	117		
Grinding Practice in Use for Alloy White Irons (87-35)—L. J. T. Brom	123		
Dynamic Fracture Toughness of Austempered Ductile Irons (87-71)—B. Faucher, K. C. Wang, M. Gagné	127		

Industrial Hygiene Aspects of Sulfur Dioxide Curing Cold Box Binders (87-60)—D. W. Warren, Jr.	295	Combined Weighing and Automatic Charging System: A Manufacturing Cell (87-34)—E. W. Brom, M. D. Polodna	451
Refinement of Hypereutectic Al-Si Alloys (87-82)—G. K. Sigworth	303	A Simple Electrical Conductivity Technique for Measurement of Modification and Dendrite Arm Spacing in Aluminum-Silicon Alloys (87-19)—D. Argo, R. A. L. Drew, J. E. Gruzleski	455
Ladle Metallurgy for the Foundry (87-16)—J. K. Cotchen	315	Instrument Functions and Interpretations of Coreless Induction Melting (87-98)—J. Garcia	465
Melting Costs for Mains Frequency Induction Furnaces (87-100)—L. V. Whiting, R. D. Warda, R. G. Anstie	323	A Coreless Induction Furnace Monitor (87-99)—D. S. Smalley	473
Use of a Large Scale Amine/Inert Gas Generator to Facilitate Binder Curing of Cold Box Foundry Cores (87-76)—F. W. Giacobbe	333	Measurement of Nitrogen in Reclaimed System Sands with an Inert Gas-Fusion Technique (87-164)—R. G. Rentschler, A. B. Draper, M. Small	479
Robotic Riser Removal (87-15)—K. Huntington	339	Constructive Use of Foundry Process Solid Wastes for Landfill Construction: A Case Study (87-101)—K. E. Martin, W. A. Stephens, J. E. Vondracek, D. P. Trainor, T. R. Stolzenburg	483
Nitrogen Fissures and the Measurement of Ammoniacal Nitrogen (87-54)—A. L. Graham, M. B. A. Mizzi, L. J. Pedicini	343	Electric Furnace Control Utilizing Personal Computers (87-38)—D. L. Schroeder	493
Controlling Water Problems in Foundry Wet Scrubber Systems (87-72)—P. F. Volk	351	Oxy-Fuel Burner Technology for Foundry Arc Furnaces (87-24)—M. B. Wells, F. A. Vonesh, Jr.	499
Casting with Phenolic Ester Binder System (87-109)—S. R. Iyer, L. E. Harper	355	Emission Characteristics of the Evaporative Pattern Casting Process (87-159)—M. G. Gressel, D. M. O'Brien, R. D. Tenaglia	503
Optimal Selection and Scheduling of New Casting Types on Pattern Plates (87-133)—J. Kim, R. L. Lewis	363	Fracture of Malleable Iron Part I: Ferritic Malleable Iron (87-117)—B. Pourladian, R. C. Voight	515
Controlled Solidification Process of 1.6 L Cylinder Head Castings (87-74)—J. Sokolowski, J. Mazurek	373	The Effect of Mn and Si on the Quality of Heavy Section A.D.I. Castings (87-70)—M. Gagné	523
Pouring Rate Versus Velocity: A Study of Gating Systems for Copper-Base Alloys (87-95)—J. O. Edwards, M. Sahoo	377	Practical Observations: Rotary Impeller Degassing (87-83)—A. R. Anderson	533
Effects of Process Parameters on Leachable Lead in Brass Foundry Sands (87-87)—P. A. Mondloch, D. W. Becker, L. Euvrard	385	Effect of Heat Treatment on the Properties of Mn-Ni-Al Bronze Propeller Alloys (87-92)—A. Couture, M. Sahoo, B. Dogan, J. D. Boyd	537
Off-Line Quality Control, Parameter Estimation, and Experimental Design with the Taguchi Method (87-144)—T. P. Enright, B. Price	393	Preparation of Investment Shell Molds by Electrophoresis (87-04)—S. Ye, C. Zhang, J. Wang, X. Cha, Y. Zhu	553
FEM Modeling and Quality Assessment of TIG Surface Remelted Pattern Grade Cast Iron (87-129)—S. Chithambaram, K. Chinnathambi, R. Krishna Kumar, O. Prabhakar	401	Aluminum Supply/Demand Dynamics (87-18)—P. F. Marcus, M. C. Jennings	563
Monitoring the Bainite Reaction During Austempering of Ductile Iron and High Silicon Cast Steel by Resistivity Measurement (87-97)—Y. J., Park, R. B. Gundlach, J. F. Janowak	411	Foundry Management "1987" Style/Hoyt Lecture (87-09)—R. H. Witt	575
Microwave Drying of Refractory Coated Foam Patterns for the Evaporative Casting Process (87-145)—B. Matz, D. C. Kearney	417	The Fate of Polystyrene in the Full Mold Casting of Gray Iron (87-86)—B. Gallois, M. Behi, J. M. Panchal	579
EPS Pattern Tooling: The User's View (87-79)—R. G. Greeley	423	Thermal Properties of Molding Sands: Casting-Over Probe Embedded Specimen Method (87-104)—P. Kanniah, K. L. Narayana, H. Md. Roshan	591
Computer Simulation for the Filling of Castings (87-141)—W. S. Hwang, R. A. Stoehr	425	Heat Transfer at the Metal-Mold Interface of Ductile Iron (87-128)—S. W. Hao, Z. Q. Zhang, J. Y. Chen, P. C. Liu	601
Process Metallurgy—Future (87-13)—J. M. Svoboda	431	Single Electrode DC Arc Furnace Operation on Scrap-Based Steel Production (87-139)—D. Meredith, S. E. Stenkvist	609
Heat Transfer and Flow Experiments During Filling of Gating Systems (87-163)—P. V. Desai, J. Wang, P. Hansen, S. F. Hansen	435	Continuous Casting of Ductile Iron: A Numerical Approach (87-112)—B. C. Godsell	613
A Computer Program for the Riserless Design of Ductile Iron Castings (87-132)—Q. X. Pei, T. S. Bai, P. C. Liu	443	Casting Reject Elimination Using Expert Systems (87-113)—R. C. Creese, S. Waibogha	617

Considerations When Selecting an SO ₂ Cold Box Process (87-140)— <i>R. Enwright, J. J. Archibald</i>	621	Microporosity in the Investment-Cast Turbine Blade of IN-713LC Superalloy (87-168)— <i>E. Chang, J. C. Chou</i>	749
Cake Formation in the Filtration of Steel with Ceramic Foam Filters (87-165)— <i>J. Liu, P. F. Wieser</i>	629	Loss Function Techniques as Applied to Steel Foundry Processes (87-181)— <i>D. R. Moneymaker, A. R. Hubbard</i>	755
An Advanced Injection Treatment System for Aluminum-Silicon Alloys (87-88)— <i>J. M. Fuqua</i>	635	Relationship of Fracture Toughness to Microstructure in Ferritic Ductile Cast Iron (87-137)— <i>R. Salzbrenner, K. Sorenson</i>	757
Competitive Factors in the Aluminum Castings Industry (87-21)— <i>R. L. Getz, G. E. Todd</i>	643	The Relationship Between Microstructure and Tensile Properties in Austempered Ductile Irons (87-115)— <i>D. J. Moore, T. N. Rouns, K. B. Rundman</i>	765
Understanding Aluminum Fluidity: The Key to Advanced Cast Products/Silver Anniversary Paper (87-33)— <i>F. R. Mollard, M. C. Flemings, E. F. Niyama</i>	647	The Effects of Cooling Rates on the Mechanical Properties of A206.0-T4 and A206.0-T71 Aluminum Alloy Castings (87-171)— <i>G. K. MacAllister</i>	775
Influence of In-the-Mold Chamber Design on Dross Formation in Ductile Iron Castings (87-173)— <i>X. Peng, Y-M. Yang, N-X. Ding, J. L. Mercer, J. F. Wallace</i>	653	New Developments in Ceramic Shell Composition (87-134)— <i>C. H. Schwartz</i>	787
Foam Vaporization Casting/Silver Anniversary Paper (87-07)— <i>M. C. Flemings</i>	665	Physico-Chemical Aspects of the Full Mold Casting of Aluminum Alloy, Part I: The Degradation of Polystyrene (87-84)— <i>S. Shivkumar, B. Gallois</i>	791
Presentation of Failure Analysis Data by the Fatigue Fracture Mechanics Diagram (87-158)— <i>R. H. Sailors</i>	673	Physico-Chemical Aspects of the Full Mold Casting of Aluminum Alloys, Part II: Metal Flow in Simple Patterns (87-85)— <i>S. Shivkumar, B. Gallois</i>	801
Fracture of Malleable Iron Part II: Pearlitic Malleable Iron (87-118)— <i>B. Pourladian, R. C. Voight</i>	681	Low Pressure Die Casting of Zinc-Aluminum Foundry Alloys (87-120)— <i>J. L. Dion, J. R. Emmett, M. Sahoo</i>	813
Effect of Fins on Casting Junction Design (87-131)— <i>R. C. Creese, A. Sarfaraz</i>	689	Effects of Copper, Tin, and Manganese on the Eutectoid Transformation of Graphitic Cast Irons (87-124)— <i>E. N. Pan, M. S. Lou, C. R. Loper, Jr.</i>	819
Evaluation of Organic Compounds in Groundwater at Ferrous Foundry Waste Landfills (87-150)— <i>R. K. Ham, W. C. Boyle, R. L. Fero</i>	693	Interfacing a Geometric Modeling Package with a Heat Transfer Simulator (87-146)— <i>B. D. Motter, J. A. M. Boulet, J. T. Berry</i>	841
Case Studies in Successful Foundry Hazardous Waste Treatment (87-148)— <i>P. D. Turpin, B. E. Dudzik</i>	695	Cost Effective Gating and Riser for Aluminum Bronze Production Castings (87-175)— <i>H. Liang</i>	847
Process Metallurgy—Past (87-166)— <i>P. F. Wieser</i>	699	The Constitution of Austempered Ductile Iron and the Kinetics of Austempering (87-116)— <i>T. N. Rouns, K. B. Rundman</i>	851
Water Treatment for Foundry Furnace Cooling Waters (87-189)— <i>R. T. Blake</i>	707	Nitrogen Contamination in Green Sand (87-187)— <i>R. S. Lee</i>	875
Possible Controls for Lead as Found in Brass and Bronze Molding Sands (87-183)— <i>P. K. Trojan, T. R. Ostrom</i>	711	Toxicity Considerations: Antimony Metal and Its Oxides (87-176)— <i>R. M. James, B. D. Dinman</i>	883
Induction Heated Ladles for Steel Foundries: Recent Developments (87-138)— <i>B. Kjellberg, M. Liebman</i>	723	Author Index	887
Analysis of Casting Defects Using the Analytical Scanning Electron Microscope (87-130)— <i>W. E. Votava</i>	729	Subject Index	893
A Large Scale Linear Programming Application to Least Cost Charging for Foundry Melting Operation (87-123)— <i>J. Kim, R. L. Lewis</i>	735		
Austenitic Manganese Steel with Nickel (87-190)— <i>S. N. Dixit</i>	745		